

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application:

LISTING OF CLAIMS:

1. (Currently amended) A method in a data communications device for directing a request to process data, comprising the steps of:

maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

receiving the request from a client;

generating, based on the usage information and an estimated request usage of the request, an estimated response usage for each resource of a-the plurality of resources that reflects a potential usage if responding to the request, said-each estimated response usage including-a-being associated, via the cost information, with a corresponding cost estimate for processing the request, the cost estimate being-based-on-a-resource-usage-amount-relating-to-the-client;

selecting a resource from said plurality of resources to process the request based on the respective cost estimate associated with said estimated response usage of each of said resources; and

forwarding the request to the-one-of-the-plurality-of-resources-selected-in-the-step-of-selecting selected resource.

2. (Previously Presented) The method of claim 1, wherein the step of selecting a resource comprises:

generating an estimated available usage for each resource based on the request and usage information received from a usage meter for each resource;
and

selecting the resource based on a highest estimated available usage for each resource.

3. (Currently amended) A data communications device for directing a request to process data, comprising:

a memory that stores a cost modeler application;
an interconnection mechanism; and
a processor coupled to the memory by the interconnection mechanism,
wherein the processor operates in accordance with instructions of the cost modeler application stored in the memory to direct the request, the instructions of the cost modeler application configuring the processor to:

maintain cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintain usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

receive the request from a client;

generate, based on the usage information and an estimated request usage of the request, an estimated response usage for each resource of a the plurality of resources that reflects a potential usage if responding to the request, said each estimated response usage including a being associated, via the cost information, with a corresponding cost

~~estimate for processing the request, the cost estimate being based on a resource usage amount relating to the client;~~

select a resource from said plurality of resources to process the request based on the respective cost estimate associated with said estimated response usage of each of said resources; and

~~forward the request to the one of the plurality of resources selected to process the request~~ selected resource.

4. (Previously Presented) The data communications device of claim 3, wherein the cost modeler application comprises further instructions that configure the processor to:

generate an estimated available usage for each resource based on the request and usage information received from a usage meter for each resource; and

select the resource based on a highest estimated available usage for each resource.

5. (Currently amended) A data communications device for directing a request to process data, comprising:

means for maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

means for maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

means for receiving the request from a client;

means for generating, based on the usage information and an estimated request usage of the request, an estimated response usage for each resource of

a-the plurality of resources that reflects a potential usage if responding to the request, said-~~each~~ estimated response usage including a-~~being associated, via the cost information, with a corresponding~~ cost estimate for processing the request, the cost estimate being based on a resource usage amount relating to the client;

means for selecting a resource from said plurality of resources to process the request based on the respective cost estimate associated with said estimated response usage of each of said resources; and

means for forwarding the request to the ~~one of the plurality of resources~~ selected in the step of selecting selected resource.

6. (Currently amended) A computer program product that includes a computer readable medium having instructions stored thereon for directing a request to process data, such that the instructions, when carried out by a data communications device, cause the data communications device to perform the steps of:

maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

receiving the request from a client;

generating, based on the usage information and an estimated request usage of the request, an estimated response usage for each resource of a-the plurality of resources that reflects a potential usage if responding to the request, said-~~each~~ estimated response usage including a-~~being associated, via the cost~~

information, with a corresponding cost estimate for processing the request; the cost estimate being based on a resource usage amount relating to the client;

selecting a resource from said plurality of resources to process the request based on the respective cost estimate associated with said estimated response usage of each of said resources; and

forwarding the request to the one of the plurality of resources selected in the step of selecting.

7 - 12. (Cancelled)

13. (Currently amended) A method for selecting with a data communication device a resource from a plurality of resources to process a request from a client, comprising the steps of:

maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

generating, based on the usage information and an estimated request usage of the request, a usage metric for each resource of the plurality of resources;

generating an economic metric for each resource based on the cost information, the usage metric for each resource, and the request; the economic metric being based on a resource usage amount relating to the client; and

choosing with the data communication device one of the plurality of the resources to respond to the request for data based on a comparison of the economic metric for each resource.

14. (Original) The method of claim 13, wherein the step of generating the usage metric comprises the steps of:

receiving usage information from a usage meter for each resource that measures the amount of usage of each resource over time;

generating an estimated base usage of each resource based on the usage information; and

generating a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information.

15. (Original) The method of claim 13, wherein the step of generating the economic metric comprises the steps of:

generating an estimated request usage for each resource that reflects an estimate of the projected usage of each resource over a current time based on the request for data; and

generating an estimated available usage for each resource based on the usage metric for each resource and the estimated request usage for each resource.

16. (Original) The method of claim 15, wherein:

the step of generating the estimated available usage comprises generating the estimated available usage based on the estimated request usage for each resource, an estimated base usage for each resource based on usage information received for each resource, and a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information.

17. (Original) The method of claim 16, wherein the step of generating the estimated available usage comprises the steps of:

identifying a subset of the plurality of resources wherein the estimated request usage is higher than a predetermined usage limit defined relative to the peak usage metric for each resource; and

assigning a predetermined marginal cost to an incremental usage of each resource in the subset.

18. (Original) The method of claim 13, wherein the step of generating the economic metric comprises generating a bandwidth metric that represents the bandwidth requirements for each resource based on (i) the request and (ii) the network address of a client providing the request and the network address of each resource.

19. (Original) The method of claim 13, wherein the step of generating the economic metric comprises generating the economic metric based on a category of the request that indicates an estimated request usage for each resource.

20. (Original) The method of claim 13, wherein the step of choosing one of the plurality of resources comprises the step of:

comparing an estimated available usage for each resource generated based on the request and the usage metric for each resource.

21. (Currently amended) A data communication device for selecting a resource from a plurality of resources to process a request from a client, the data communication device comprising:

a memory that stores a cost modeler application;

an interconnection mechanism; and

a processor coupled to the memory by the interconnection mechanism, wherein the processor operates in accordance with instructions of the cost modeler application stored in the memory to select the resource, the instructions of the cost modeler application configuring the processor to:

maintain cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintain usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

generate, based on the usage information and an estimated request usage of the request, a usage metric for each resource of the plurality of resources;

generate an economic metric for each resource based on the cost information, the usage metric for each resource, and the request, the economic metric being based on a resource usage amount relating to the client; and

choose one of the plurality of the resources to respond to the request for data based on a comparison of the economic metric for each resource.

22. (Original) The data communications device of claim 21, wherein the cost modeler application comprises further instructions that configure the processor to:

receive usage information from a usage meter for each resource that measures the amount of usage of each resource over time;

generate an estimated base usage of each resource based on the usage information; and

generate a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information.

23. (Original) The data communications device of claim 21, wherein the cost modeler application comprises further instructions that configure the processor to:

generate an estimated request usage for each resource that reflects an estimate of the projected usage of each resource over a current time based on the request for data; and

generate an estimated available usage for each resource based on the usage metric for each resource and the estimated request usage for each resource.

24. (Original) The data communications device of claim 23, wherein the cost modeler application comprises further instructions that configure the processor to generate the estimated available usage based on the estimated request usage for each resource, an estimated base usage for each resource based on usage information received for each resource, and a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information.

25. (Original) The data communications device of claim 24, wherein the cost modeler application comprises further instructions that configure the processor to:

identify a subset of the plurality of resources wherein the estimated request usage is higher than a predetermined usage limit defined relative to the peak usage metric for each resource; and

assign a predetermined marginal cost to an incremental usage of each resource in the subset.

26. (Original) The data communications device of claim 21, wherein the cost modeler application comprises further instructions that configure the processor to generate a bandwidth metric that represents the bandwidth requirements for

each resource based on (i) the request and (ii) the network address of a client providing the request and the network address of each resource.

27. (Original) The data communications device of claim 21, wherein the cost modeler application comprises further instructions that configure the processor to generate the economic metric based on a category of the request that indicates an estimated request usage for each resource.

28. (Original) The data communications device of claim 21, wherein the cost modeler application comprises further instructions that configure the processor to compare an estimated available usage for each resource generated based on the request and the usage metric for each resource.

29. (Currently amended) A data communications device for selecting a resource from a plurality of resources to process a request from a client, the data communications device comprising:

means for maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

means for maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

means for generating, based on the usage information and an estimated request usage of the request, a usage metric for each resource of the plurality of resources;

means for generating an economic metric for each resource based on the cost information, the usage metric for each resource, and the request, the economic metric being based on a resource usage amount relating to the client;

and

means for choosing one of the plurality of the resources to respond to the request for data based on a comparison of the economic metric for each resource.

30. (Currently amended) A computer program product that includes a computer readable medium having instructions stored thereon for selecting a resource from a plurality of resources to process a request from a client, such that the instructions, when carried out by a data communications device, cause the data communications device to perform the steps of:

maintaining cost information for a plurality of resources available to satisfy client requests via a plurality of resource providers, the cost information for each resource specifying a relationship between levels of usage of the resource in a billing interval and corresponding levels of prices charged by the respective resource provider in the billing interval;

maintaining usage information for the plurality of resources, the usage information for each resource specifying a level of usage of the resource that has been experienced during the billing interval;

generating, based on the usage information and an estimated request usage of the request, a usage metric for each resource of the plurality of resources;

generating an economic metric for each resource based on the cost information, the usage metric for each resource, and the request, ~~the economic metric being based on a resource usage amount relating to the client;~~ and

choosing one of the plurality of the resources to respond to the request for data based on a comparison of the economic metric for each resource.

31. (Currently amended) ~~The method of claim 13~~ A method for selecting with a data communication device a resource from a plurality of resources to process a request from a client, comprising the steps of:

_____ generating a usage metric for each resource of the plurality of resources;
_____ generating an economic metric for each resource based on the usage
metric for each resource and the request, the economic metric being based on a
resource usage amount relating to the client; and

_____ choosing with the data communication device one of the plurality of the
resources to respond to the request for data based on a comparison of the
economic metric for each resource.

_____ wherein the step of generating the usage metric comprises the steps of:
receiving usage information from a usage meter for each resource
that measures the amount of usage of each resource over time;
generating an estimated base usage of each resource based on the
usage information; and
generating a peak usage metric for each resource that represents a
measurement of the highest level of usage attained for each resource over
a current billing period based on the usage information;
wherein the step of generating the economic metric comprises the steps

of:

generating an estimated request usage for each resource that
reflects an estimate of the projected usage of each resource over a
current time based on the request for data; and

generating an estimated available usage for each resource based
on the usage metric for each resource and the estimated request usage
for each resource;

wherein the step of generating the estimated available usage comprises
generating the estimated available usage based on the estimated request usage
for each resource, an estimated base usage for each resource based on usage
information received for each resource, and a peak usage metric for each
resource that represents a measurement of the highest level of usage attained
for each resource over a current billing period based on the usage information;

wherein the step of generating the estimated available usage comprises the steps of:

identifying a subset of the plurality of resources wherein the estimated request usage is higher than a predetermined usage limit defined relative to the peak usage metric for each resource; and

assigning a predetermined marginal cost to an incremental usage of each resource in the subset; and

wherein the step of choosing one of the plurality of resources comprises the step of comparing an estimated available usage for each resource generated based on the request and the usage metric for each resource.

32. (Currently amended) ~~The data communications device of claim 21~~ A data communication device for selecting a resource from a plurality of resources to process a request from a client, the data communication device comprising:

_____ a memory that stores a cost modeler application;

_____ an interconnection mechanism; and

_____ a processor coupled to the memory by the interconnection mechanism,

wherein the processor operates in accordance with instructions of the cost modeler application stored in the memory to select the resource, the instructions of the cost modeler application configuring the processor to:

_____ generate a usage metric for each resource of the plurality of resources;

_____ generate an economic metric for each resource based on the usage metric for each resource and the request, the economic metric being based on a resource usage amount relating to the client; and

_____ choose one of the plurality of the resources to respond to the request for data based on a comparison of the economic metric for each resource,

_____ wherein the cost modeler application comprises further instructions that configure the processor to:

receive usage information from a usage meter for each resource that measures the amount of usage of each resource over time;

generate an estimated base usage of each resource based on the usage information; and

generate a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information;

wherein the cost modeler application comprises further instructions that configure the processor to:

generate an estimated request usage for each resource that reflects an estimate of the projected usage of each resource over a current time based on the request for data; and

generate an estimated available usage for each resource based on the usage metric for each resource and the estimated request usage for each resource;

wherein the cost modeler application comprises further instructions that configure the processor to generate the estimated available usage based on the estimated request usage for each resource, an estimated base usage for each resource based on usage information received for each resource, and a peak usage metric for each resource that represents a measurement of the highest level of usage attained for each resource over a current billing period based on the usage information;

wherein the cost modeler application comprises further instructions that configure the processor to:

identify a subset of the plurality of resources wherein the estimated request usage is higher than a predetermined usage limit defined relative to the peak usage metric for each resource; and

assign a predetermined marginal cost to an incremental usage of each resource in the subset; and

wherein the cost modeler application comprises further instructions that configure the processor to compare an estimated available usage for each

resource generated based on the request and the usage metric for each resource.

33. (Previously Presented) The method of claim 1 wherein the data communications device is in communication with multiple servers, and wherein the method further comprises the step of:

receiving server data from the servers to make cost estimates based on a marginal cost increase for each server to handle the request, where past usage is a relevant factor when considering a peak usage level already established for a resource in a billing period.